



The Impact of Intellectual capital on Organizational performance in Egyptian Mobile Telecommunications Sector

أثر رأس المال الفكري على الأداء التنظيمي في قطاع
الاتصالات اللاسلكية المصري

Dr. Azza Abdelkader El Borsal
Associate Professor
Faculty of Business, Ain Shams
University
azza_elborsaly@hotmail.com

Dr Abd-Elrahman Hassanein
Faculty of Business
Ain Shams University
abdohassanein123@gmail.com

MR. Sally Ali Hassan
Assistant Professor
Faculty of Business, Ain Shams
University
sallyosman2010@yahoo.co.uk

مجلة الدراسات التجارية المعاصرة

كلية التجارة – جامعة كفر الشيخ
المجلد التاسع . العدد الخامس عشر- الجزء الأول
يناير ٢٠٢٣

رابط المجلة : <https://csj.journals.ekb.eg>

Abstract

Purpose – The aim of this research is to empirically study the impact of intellectual capital (IC) (i.e., human capital, relational capital, structural capital) on organizational performance (OP) in Egyptian mobile telecommunications sector.

Design/methodology/approach – Data was collected by means of a questionnaire survey from 384 top, middle, and supervisory level managers from 3 Egyptian mobile telecommunications companies.

Findings – The results showed that IC has a strong positive impact on OP. The results also indicated that Egyptian mobile telecommunications companies have generally emphasized the usage of structural capital to boost their OP.

Practical implications – senior executives of mobile telecommunications companies in Egypt should give primary interest to IC measurement and management.

Originality/value – This research is among only a few to study the relationship of IC and OP in Egypt and the first to investigate this relationship within Egyptian mobile telecommunications setting.

Research limitations/implications – This is an empirical research applied in the Egyptian telecommunications setting. These relationships need further investigation in other settings and countries. Also, the current study is a cross-sectional research. Longitudinal research may offer more findings on how IC affects OP over time.

Keywords: intellectual capital, organizational performance, telecommunications, Egyptian mobile telecommunications companies, Egypt

المخلص

الغرض - الهدف من هذا البحث هو دراسة تأثير رأس المال الفكري (أي رأس المال البشري ، رأس المال العلاقتي ، رأس المال الهيكلي) على الأداء التنظيمي في قطاع الاتصالات المحمولة المصرية.

التصميم / المنهجية / المنهج - تم جمع البيانات عن طريق استبيان من ٣٨٤ مديرًا من مستوى الإدارة العليا و الوسطى و الإشرافية من ٣ شركات من شركات اتصالات المحمول المصرية.

النتائج - أظهرت النتائج أن رأس المال الفكري له تأثير إيجابي قوي على الأداء التنظيمي. أشارت النتائج أيضًا إلى أن شركات اتصالات المحمول المصرية بشكل عام تستخدم رأس المال الهيكلي لتعزيز عملياتها التشغيلية.

الإستنتاجات - يجب على كبار المديرين التنفيذيين لشركات الاتصالات المحمول في مصر إعطاء الاهتمام الأساسي لقياس وإدارة رأس المال الفكري.

الأصالة - يعد هذا البحث من بين عدد قليل فقط من الدراسات التي قامت بدراسة العلاقة بين رأس المال الفكري و الأداء التنظيمي في مصر وأول من بحث في هذه العلاقة ضمن بيئة الاتصالات المحمول المصرية.

حدود البحث - هذا البحث مطبق في بيئة الاتصالات المصرية. تحتاج هذه العلاقات إلى مزيد من الدراسة في القطاعات والبلدان الأخرى. أيضًا، إستخدمت هذه الدراسة المنهج التجريبي و قد يفيد إستخدام مناهج بحثية أخرى(المنهج التاريخي أو التحليلي و المقارن) لتقديم المزيد من النتائج حول كيفية تأثير رأس المال الفكري على الأداء التنظيمي.

الكلمات المفتاحية: رأس المال الفكري ، الأداء التنظيمي ، الاتصالات ، شركات الاتصالات المحمول المصرية ، مصر.

1. Introduction

Nowadays, an organization's value creation is mostly based on its capabilities, competencies, and intangible resources (Demartini & Baretta, 2019; Stewart, 1997). It is argued that the value created by intellectual assets clearly outweighs the value created by material assets, and the World Bank (2005) claimed that intangible assets account for 77% of global wealth. Furthermore, in today's information economy, exploitation of knowledge resources is increasingly being recognized to be the source of a company's success, competitiveness, and long-term performance. (Beattie & Smith, 2013).

In addition the Covid 19 crisis that the world has faced in the past two years has called for more attention to be given to intangible assets that could be used to enhance the innovation and creativity of organizations; to provide services to people during that crisis. Intellectual capital with its dimensions structural, human and relational aspects; can boost the performance of organizations if fully utilized (Jones et al, 2000; Landini et al, 2020).

Some research studies have assumed that IC is positively and significantly related to the innovation capability of a company (Castro et al., 2013; Subramaniam and Youndt, 2005). The company's knowledge assets have been constantly considered the most significant strategic assets that contribute to successful OP and sustained competitive advantage in the modern dynamic and challenging business environment (Obeidat et al., 2016).

The role of intellectual capital (IC) in the current economic era is significant; it will be a very important resource to different companies in the economy, especially during and after the crisis of Covid 19. In fact, there is little guidance on the way these very important knowledge assets are identified, enriched, bundled, converted, revitalized and combined into distinctive strategic core competences. Furthermore, there are a few research studies on the way these context-specific resources are employed to produce impact on business performance (Lerro et al., 2014; Tjahjadi et al, 2019).

Many conceptual and empirical researches have argued that there is an association between IC and firm performance (Andreeva and Garanina, 2016; Bontis et al., 2018; Bollen et al., 2005; Ling, 2013; Orbaningsih, 2020;), nevertheless, limited number of studies has investigated the influence

of IC on OP in developing countries as Egypt and particularly in important sectors as the telecommunication sector which significantly contributes to enhancing Egyptian economy. It is important to explore how large telecommunication companies have used their intellectual capital to enhance their performance in different economic situations.

The aim of this research is to study the impact of IC dimensions on OP within Egyptian mobile telecommunications sector. This study is considered one of the few researches that tried to measure these constructs and investigate their relationship to organizational performance in this particular sector.

2. Literature Review

2.1. *Intellectual capital*

Researchers and academics have researched the main principles and definitions of IC extensively. With various research studies, the first big wave of IC research began in the late 1990s. As a result, IC was described as the sum of all competencies and knowledge that can contribute to a company's long-term competitive advantage. (Stewart, 1997). This means that intellectual property, intellectual material, customer relationships, experience, knowledge, information, and core technologies are all part of IC and may be able to increase a firm successful and wealthy. (Stewart, 1997).

Dumay (2013) assumed that "Intellectual Capital is the sum of everything a company's employees know about what offers it a competitive advantage. It's intellectual property, knowledge, experience, intellectual property, and information that can be used to create value (monetary, utility, social, and long-term value)". IC is also defined as "the complete amount of knowledge that will be used for creating sustained competitive advantage in an organization,". (Wang et al., 2014)". Lentjušenkova and Lapina (2016) defined intellectual capital as " human capital, business processes (procedures and descriptions), information and communication technology, and intangible assets that can be turned into tangible and intangible value" are among the assets of a firm.

There are various reasons to believe that managing IC has benefits, and these reasons give a solid case for a better knowledge of managing IC for

the development of company value. To start with, it is well acknowledged that the value generation dynamics are the outcome of ongoing organizational performance improvement. In order to improve performance, an organization needs to continuously improve its effectiveness as well as efficiency. Only through the ongoing growth of organizational capabilities is this feasible. The skills are based on the organizational knowledge assets that form the organizations' IC. As a result, IC assessment and management play a critical role in helping organizations enhance their performance and value generating dynamics. (Lerro et al., 2014; Marr et al., 2004).

Marr et al.(2003) argued that in order to develop new business models, organizations need to manage and assess intangible and knowledge resources which represent the new competitive factors for creating value in the global business. Furthermore, the management and appraisal of knowledge assets contribute to an organization's governance by improving strategy formulation and, more crucially, by influencing organizational behavior. The function and value of knowledge assets for a company's success, as well as the importance of caring for organizational knowledge resources, can be highlighted through IC measurement.

Ferenhof et al. (2015) suggested that the main IC dimensions included the human, structural, relational and social capitals which is more oriented towards society. However, this paper adopts the traditional taxonomy composed of three dimensions human structural and relational capital.

Human capital is defined as "Creativity, teamwork capacity, flexibility, motivation, learning capacity and education which positively influence innovativeness and performance of firms ' (Leitner, 2011). Wang and Chen (2016) argued that human capital is defined as "the sum of individuals' competence, knowledge, skills, innovativeness, attitude, commitment, wisdom, and experience, which reflects an organization's individual knowledge pool to achieve particular aims." Lentjušenkova and Lapina (2016) argued that human capital resides in the skills and knowledge, mind-set and ability to act in certain ways and in certain environments. Accordingly, all of the human capital attributes stem from the skills and knowledge gained by the employee through his organization's investments in developing those attributes.

Structural capital is " the codified experience and institutionalized knowledge incorporated in organizational systems and processes (Ling, 2013). Mention and Bontis (2013) argued that structural capital is the organizational infrastructure that motivates employees to create and leverage its knowledge.

Wang et al. (2016) argued that structural capital encompasses " Organizational capabilities, organizational culture, routines, procedures, information systems, hardware, software, databases, company pictures, patents, copyrights, trademarks, and so on are all valuable strategic assets". On a slightly different remark, literature expanded structural capital to include the firm's relationships with external networks and the external environment (Tovstiga and Tulugurova, 2007).

Relational capital is defined as the knowledge that stems from the company's external relations (Wu et al., 2008). Mention and Bontis (2013) stated that relational capital is " the ability of a company to communicate with a wide range of external stakeholders (such as customers, suppliers, competitors, trade and industry groups), as well as the knowledge embedded in those interactions." Relational capital is also defined as " Relationships between an organization and its external stakeholders have knowledge and learning capacities. (Wang et al., 2016). It's important for companies since it helps them create value by linking internal intellectual resources with external stakeholders. Accordingly, relational capital can exist at both institutional and individual levels.

2.2. *Organizational Performance*

OP is defined as the degree that provide companies with the ability to meet its stakeholders' needs and its needs for success and survival. Accordingly, performance is not properly equal to having the best products, a high market share or a certain profit margin, although these things may be the outcomes of entirely realizing how to describe the performance. OP is affected by numerous factors that are mixed together in distinctive ways to both detract and enhance performance (Griffin, 2003).

Albadvi et al. (2007) described OP from the perspective of people results, customer results, operational results and growth results. These dimensions are significantly important in measuring the performance of

mobile telecommunications organizations, since those organizations are service oriented and possess a distinctive relationship with the customer and external environment, this means that performance must be measured in a broader manner, taking into account a variety of factors.

Another definition for organizational performance (OP) is “comparing the actual results with the expected ones, examining the deviations from plans, evaluating individual performance and investigating the progress towards achieving the targeted objectives” (Nghah and Ibrahim, 2010).

For rating businesses and differentiating them from their competitors, organizational performance evaluation is essential. The performance evaluation usually includes three types of firm results: financial performance, shareholder return and market performance (Neely, 2007). The performance of firm is quite unique because the measures used for a certain firm will be developed in light of its strategic choices. Those performance measures or (KPI's) are used as a benchmark for whether or not the firm achieved its strategic objectives. It is very important that the firm develop performance measurements that could evaluate both tangible (profits, market share,..) and intangible (customer satisfaction, employee engagement,..) business results.

Currently, there are a large number of measurement systems and conceptual frameworks that measures the performance of organizations. Many research studies investigated the usage and adoption of particular strategic performance measurement models. In this study, attention was directed to the balanced scorecard developed by Kaplan and Norton (1992).

Performance measurement using the Balanced Scorecard method has been widely used in business organizations. Balanced scorecard is a comprehensive performance evaluation tool that enables the firm to measure its performance from a holistic view (Bazrkar, Iranzadeh, & Farahmand, 2018), through focusing on financial and non-financial performance indicators (Mehralian et al., 2017).

There are four perspectives in BSC: financial, customer, internal business, and learning and growth. The financial perspective emphasis the financial aspect of a firm's performance as profits and market share (Baporikar, 2015). The customer perspective focuses on the needs of the customers and their satisfaction. In this perspective; the customers are:

business customers who buy products or services, stakeholders, and community in which the organization operates. Internal business perspective measures internal activities and how those activities are managed effectively (Panicker & Seshadri, 2013). Lastly, the knowledge and learning perspective refers to training, development, knowledge management, employees' learning and the culture of the organization (Amirkhani, Nazeryani, & Faraz, 2016).

3. Research Hypotheses and Proposed Framework

3.1. *Intellectual capital and organizational performance*

The relationship between IC and OP has been increasingly investigated since early 2000s. Several and various measurement models of IC and OP have been developed and utilized; therefore, the answer to the key question "Does IC systematically influences OP?" is much more complex than a plain 'yes' (Inkinen, 2015)".

The majority of empirical research works claim that the IC dimensions increase OP by interacting and combining them. (Bontis et al., 2018; Andreeva and Garanina, 2016; Kim et al., 2012; Suraj and Bontis, 2012; Sharabati et al., 2010; Maditinos et al., 2010; Kamukama et al., 2010). One way of depicting these interactions and combinations is to state that human capital is required to build structural capital – the firm's knowledge pool – and structural capital is required to build relational capital with the environment. (F-Jardón and Martos, 2009; Jardon and Martos, 2012).

Similarly, researchers have also claimed that the cumulative growth of a firm can be explained and predicted by their capability to convert the knowledge of their employees into organizational knowledge (González-Loureiro and Dorrego, 2012) or that human and structural capital positively influence OP (Andreeva and Garanina, 2016). According to Maditinos et al. (2010), human capital is significantly and positively related to customer capital. On the other hand, customer capital and innovation capital influence structural capital, which in turn has a positive relationship with business performance.

Simultaneously, the results of Castro et al. (2013) showed that a significant proportion of product innovations are brought about by skilled, innovative, and experienced personnel acting in concert with a company's client

networks.. In other words, it can be said the internal expertise of the firm in conjunction with knowledge rooted in relationships with external environment can hasten and enhance innovativeness even in the absence of intensive structural capital support.

Hormiga et al. (2011) discovered that new enterprises gain mostly from internal knowledge, activity, and abilities, as well as factors like the firm's reputation, accessibility, connectedness, and network support. Furthermore, the interplay and combination of relational and human capital, particularly education levels and staff training, has a significant impact on firm performance (Huang and Hsueh, 2007; Bontis et al., 2018), and the combined impact of relational and human capital improves organisational learning ability and innovative performance (Hsu and Fang, 2009).

Human capital, according to numerous research studies, supports and strengthens the other IC components, all of which have a direct impact on company performance (Cabrita and Bontis, 2008; Kim et al., 2012). In general, it appears that the interactions of the IC components determine the majority of OP. When employees' knowledge, abilities, and competences, organisational supporting structures, or existing relationships are considered independently, they have minimal value, but when combined, they represent a powerful OP determinant.

As a result, it can be stated that organisations that possess high total IC can achieve much superior OP than companies with lower total IC (Cabrita and Bontis, 2008), or that companies must improve their entire IC in order to improve OP (Cabrita and Bontis, 2008). (Nkundabanyanga, 2016). As a result, it's possible that a better IC leads to a better OP.

H1: Intellectual Capital (IC) (Human capital, Relational capital, and Structural capital) has a significant impact on Organizational Performance (OP).

H1.a Intellectual Capital (IC) has a significant impact on financial performance.

H1.b Intellectual Capital (IC) has a significant impact on customer/market performance.

H1.c Intellectual Capital (IC) has a significant impact on learning and growth performance.

H1.d Intellectual Capital (IC) has a significant impact on internal process performance.

The research framework can be graphically represented in Figure (1) based on the preceding literature review and formulated hypotheses.

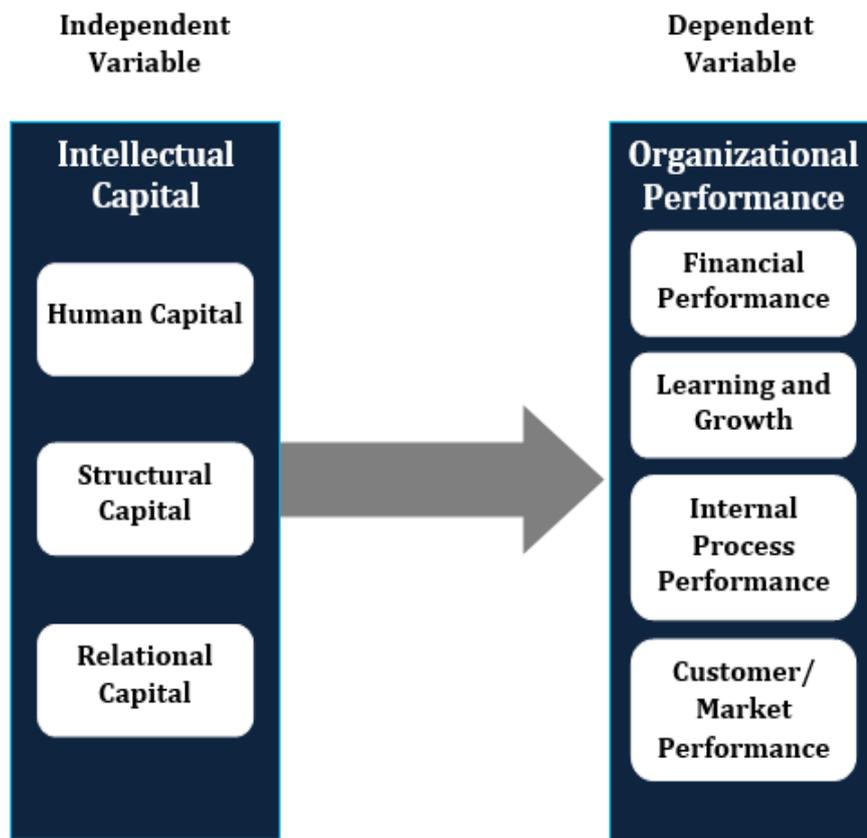


Figure (1) Research Framework

4. Research Methodology

4.1. Questionnaire design and measures

A questionnaire was developed to collect data for the purpose of testing research hypotheses. The questionnaire was divided into four parts and was sent to employees of Egyptian mobile telecommunications providers

(Vodafone, Orange, and Etisalat). The first section covered an introduction to the variables and dimensions that were being measured. The demographic features of respondents were covered in the second section, which included gender, age, education, job title, and years of experience. The third section addressed the Intellectual Capital (ICs) dimensions. It is based on Sharabati et al. (2010) and Bontis'(1998) IC surveys. The questionnaire is widely used by academics and practitioners in the study of intellectual capital since it is regarded a trustworthy and validated tool. It has a total of sixty three closed-ended statements for IC measurement. Each item is rated on a five-point Likert scale, with the end anchors 5 (strongly agree) and 1 (strongly disagree). The human capital dimension was measured with 24 statements, the structural capital dimension with 22 statements, and the relational capital dimension with 17 statements.

The fourth section used a balance score card to assess the organisational performance (OP) of Egyptian mobile firms. Financial, customer/market, internal process, learning, and growth are the four pillars on which it was developed. Its components were adopted from Suraj & Bontis (2012) and Sharabati et al. (2010)'s ten items in order to fit within the four aspects of Kaplan and Norton's balanced scorecard and in the mobile communications setting. The four performance dimensions were covered by 16 closed-ended statements.

4.2. Population and sample

Employees of three Egyptian mobile telecommunications firms were included in the study's target group. The sample frame was thirty thousand employees. A random sample of 384 employees was chosen at a (95 percent) confidence level and a margin of error of 5%. The research tool addressed managers and supervisors (top, middle, and supervisory management) from the three Egyptian mobile telecommunications businesses.

4.3. Validity and Reliability of Questionnaire

The research questionnaire was created following a thorough review of related theoretical and empirical research papers that looked at the study topics, namely the IC and OP dimensions. The initial statements for the questionnaire were written in English. Nonetheless, the statements were

translated into the respondents' native language, Arabic, to guarantee that the questionnaire statements were fully understood and to boost the response rate.

An initial draft of the questionnaire was sent to academic referees to be evaluated for content and face validity. The referees were five professors from Ain Shams University's Business Administration department, all of them were bilingual (fluent in Arabic and English). In addition, the researcher solicited the opinions of four executives who work for mobile telecommunications companies to determine whether the questionnaire statements were comprehensible, relevant, and unambiguous. A final copy of the questionnaire was created for data collection based on the two previous processes. As a result, content and face validity were confirmed.

Internal consistency was measured using Cronbach's alpha coefficient (α). According to Sekaran (2003), variances between 0 and 1 are acceptable, and reliability is acceptable if is higher than 0.60. The reliability coefficients were measured for both constructs: intellectual capital and organization performance. The results showed that reliability coefficients exceeded the criterion of (0.60). As a result, the research instrument can be considered reliable. Table (1) presents the reliability coefficients and descriptive statistics for each construct, such as the standard deviation and mean.

Table (1) Reliability coefficients and descriptive statistics for research constructs

Research Constructs	No.of items	Cranach's α	Mean	Std, Deviation
Human Capital	24	0.95	4.11	0.563
Structural Capital	22	0.96	4.13	0.597
Relational Capital	17	0.93	4.12	0.533
IC	63	0.98	4.12	0.554
Financial performance	4	0.82	4.00	0.640
Customer performance	4	0.81	3.24	0.621
Learning and growth performance	4	0.78	4.17	0.616
Internal process performance	4	0.85	4.17	0.621
OP	16	0.94	4.14	0.571

5. Validation of hypothesis

To determine the impact of various IC dimensions (human capital, structural capital, and relational capital) on OP, a multiple regression analysis (using SPSS) was used. To assess the overall significance of the regression model, the F-Test (from the ANOVA table) was used. T-Test was used to determine the significance of each independent variable. R-Square was used to assess the regression model's explanatory and predictive ability. Finally, multiple correlation coefficients (R): To assess the strength of the association between the dependent and independent variables. Table (2) shows the findings of this investigation.

Table (2): Results of multiple regression analysis of Intellectual capital dimensions on overall organization performance

Independent Variable	Dependent variable	B	Beta	T-Test	Sig.	R	R ²	F	Sig.
Human Capital	OP	0.109	0.108	1.331	0.184	0.800	0.639	224.652	0.000
Structural Capital		0.578	0.604	7.320	0.000				
Relational Capital		0.108	0.104	1.198	0.232				

The entire IC-OP regression model was significant ($F=224.652$, P -value 0.05), according to the findings. It was accounted for 63.9 percent of the variance in OP ($R^2 = 0.639$). Multiple correlation coefficient (R) for the independent variable (IC) and the dependent variable (OP) were equal to 0.800, indicating a significant correlation between (IC) and (OP). The model coefficients revealed that structural capital accounted for a large portion of OP (P -value < 0.05). The calculated regression coefficient was 0.578, demonstrating a positive relationship between the two variables. The independent variables "relational capital or human capital" and the dependent variable "OP" have no statistically significant relationship (P -value > 0.05). As a result, the main hypothesis was only partially accepted.

Table (3) Results of multiple regression analysis for IC dimension on OP dimensions

Independent Variables	Dependent variable	B	Beta	T-Test	Sig.	R	R ²	F	Sig.
Human Capital	Financial performance.	0.197	0.173	1.910	0.057	0.741	0.550	154.513	0.000
Structural Capital		0.464	0.433	4.697	0.000				
Relational Capital		0.181	0.157	1.608	0.109				
Human Capital	Customer/ market performance.	0.004	0.004	0.040	0.968	0.695	0.483	118.477	0.000
Structural Capital		0.623	0.599	6.062	0.000				
Relational Capital		0.113	0.101	0.966	0.335				
Human Capital	Learning and growth performance.	0.114	0.104	1.161	0.246	0.748	0.560	161.178	0.000
Structural Capital		0.596	0.577	6.338	0.000				
Relational Capital		0.091	0.081	0.845	0.398				
Human Capital	Internal process performance.	0.123	0.111	1.233	0.219	0.742	0.551	155.336	0.000
Structural Capital		0.627	0.602	6.544	0.000				
Relational Capital		0.046	0.041	0.420	0.675				

There was a strong correlation between IC factors and financial performance ($R = 0.741$), as shown in Table (3). IC variables accounted for 55% of the variance related to financial performance ($R^2 = 0.550$). Analysis of regression coefficients showed that financial performance was significantly accounted for by structural capital ($P\text{-value} < 0.05$). The value of the estimated regression coefficient was 0.464, indicating that the two variables were positively related. Conversely, there was no statistically significant relationship between the independent variables “relational capital or human capital” and the dependent variable “financial performance” ($P\text{-value} > 0.05$).

There was a moderate correlation between IC variables and customer/market performance ($R = 0.695$), and IC variables accounted for 48.3% of the variance related to customer performance ($R^2 = 0.483$). Analysis of regression coefficients showed that customer performance was significantly accounted for by structural capital ($P\text{-value} < 0.05$). The value of the estimated regression coefficient was 0.623, demonstrating a positive relationship between the two variables. On the contrary, there was no statistically significant relationship between the independent variables “relational capital or human capital” and the dependent variable “customer performance” ($P\text{-value} > 0.05$).

The findings also indicated that there was a strong correlation between IC variables and learning and growth performance ($R = 0.748$), and IC variables accounted for 56% of the variance related to learning and growth performance ($R^2 = 0.560$). Analysis of regression coefficients showed that learning and growth performance is significantly accounted for by structural capital ($P\text{-value} < 0.05$). The value of the estimated regression coefficient was 0.596, indicating that the two variables were positively related. Conversely, there was no statistically significant relationship between the independent variables “relational capital or human capital” and the dependent variable “learning and growth performance” ($P\text{-value} > 0.05$).

Finally, a strong relationship between IC variables and Internal process performance ($R = 0.742$) was found, and IC variables accounted for 55.1% of the variance related to Internal process performance ($R^2 = 0.551$). Analysis of regression coefficients showed that internal process performance is significantly accounted for by structural capital ($P\text{-value} < 0.05$). The value of the estimated regression coefficient was 0.627, indicating that the two variables were positively related. In contrast, there was no statistically significant association between the independent variables “human capital or relational capital” and the dependent variable “Internal process performance” ($P\text{-value} > 0.05$). *Accordingly, the four sub-hypotheses (H1.a – H1.d) are partially accepted*

5. Discussion, practical implications and conclusions

In a knowledge-intensive industry like telecommunications environment, achieving and maintaining exceptional organizational performance (OP) has become a must. Intellectual capital (IC) has been considered as a key driver

of organization performance (OP). It is critical to understand that a company's intellectual assets are the true sources of its current and future competitive success. These are unique, intangible, and priceless assets. As a result, managers should be advised to improve OP by investing more in structural capital, relational capital, and human capital.

The goal of this study was to show how IC affected OP in Egyptian mobile telecommunications context. The study's findings revealed that, on average, respondents gave the independent variable dimensions (IC) a high rating. The "structure capital" category received the highest rating, followed by "relational capital" and finally "human capital." This is in agreement with Ismail (2003) and Kamukama et al. (2010) findings. Andreeva and Garanina (2016) and Wang et al., (2014), on the other hand, found that "human capital" received the highest rating. While Sharabati et al. (2010) and Bontis (1998) found that "relationship capital" received the highest rating. The centrality of structural and relational capital in defining the IC of Egyptian mobile telecommunications firms is highlighted by this result. To put it another way, the telecommunication companies studied place a greater emphasis on exploiting their structural and relational capitals while paying less attention to improving their human capital.

Moving to organization performance variable (OP); the "customer performance" category received the highest rating, followed by "learning and growth performance," "internal process performance," and lastly "financial performance." The empirical data revealed a substantial relationship between IC factors and OP, with the former accounting for 63.9 percent of the variance in the latter ($R^2 = 0.639$). Only "structural capital" has a statistically significant positive impact on OP among the three factors. This is in contrast to the findings of Bontis et al., (2018); Mehdivand et al., (2012); Suraj and Bontis, (2012), who found that relational and human capital have a considerable impact on business performance, whereas structural capital had no impact. Andreeva and Garanina (2016), on the other hand, found that only human and structural capitals positively influence OP, with structural capital having a greater impact on performance than human capital. This study suggests that management systems and programs, organisational structure, research and development, and information systems and databases all have a significant impact on OP levels.

The findings also revealed that IC factors are strongly linked to financial performance, learning and growth performance, and internal process performance. Among the three (IC) dimensions; only structural capital has a positive and statistically significant impact on these three OP dimensions. This finding is inconsistent with Kamukama et al. (2011), who found that IC has a considerable impact on financial performance, with competitive advantage mediating the association between IC and financial success. Furthermore, this study contradicts the findings of Wang et al. (2014) and Kamukama et al. (2010), who indicated that the three IC features are significantly linked to financial performance. Our results also contradicts the findings of Wang et al. (2014), who claimed that organisational structural, human, and relational capital enhanced both financial and operational performance.

The findings also revealed a moderate relationship between IC dimensions and customer performance. Only structural capital demonstrated a positive and statistically significant relationship with customer performance among the three IC dimensions. This contradicts the findings of Agostini et al. (2017), who indicated that relational capital, as reflected by technological reputé, open innovation with business partners, and firm marketing capabilities, improves customer performance.

As a result, structural capital has been found as the sole construct in this study that has a direct impact on OP and its dimensions, implying that Egyptian mobile telecommunications companies have prioritized the usage of structural capital to improve their performance. Human capital has been identified in the literature as an essential component that enhances the performance of other IC elements (Jardon and Martos, 2012; González-Loureiro and Dorrego, 2012); as a result, Egyptian mobile telecommunications executives must determine why human capital has had no significant impact on OP.

Different aspects of human capital should be given more consideration by mobile telecommunications companies, it is recommended. Rather than relying solely on candidates' technical skill, staff recruitment and selection criteria should focus on identifying personal attributes such as honesty, empathy, and abilities such as leadership, employee self-motivation, and social competences. Those skills are typically acquired throughout the

course of an employee's career and are extremely difficult to acquire through the organization's programs.

Training strategies should be established in partnership with Egyptian higher education institutions, saving a large amount of money, time, and effort that would otherwise be spent onboarding and training prospective university graduates. Because human capital resources are the source of IC (and its components), mobile telecommunications companies' competitive position weakens when they lack human capital resources.

Managers should pay special attention to relationships with customers and other stakeholders in order to strengthen the institution's image and build brand equity. This can be accomplished by training employees to have a deeper understanding of various market segments, establishing a closer relationship with customers and providing them with better service, and implementing practices that promote and enhance an open innovation climate for communication and collaboration among various business actors whose competence can increase the scope and level of possible innovation, thus satisfying a larger customer base.

It should also be emphasized that an organization's (IC) condition is dynamic and changing. Because the attributes of an organization change over time, mobile companies should conduct (IC) screening on a regular basis to assess (IC) accumulation using indices and metrics that are aligned with its own value generation and strategy. They should also include the firm's IC portfolio and its evolution in the annual report.

Finally, our study supports the hypothesis that (IC) has the potential to become a new source of profit in telecoms firms. (IC) was discovered to be crucial in predicting (OP). Numerous earlier research studies have backed this conclusion, demonstrating that the (IC) construct is universal in nature. In addition, the current study adds to the (IC) literature by identifying the primary IC dimensions that influence and predict (OP). Mobile telecommunications firms must improve and manage their (IC) resources, which are important and vital to the organization, in order to survive and prosper in today's global and interconnected economy. The focus of management should be on IC resources, as competitive and long-term success is no longer based on financial capital and physical assets, but rather on the effective use and management of IC.

6. Limitations and Future Research Directions

Despite its contribution to the literature, the current study has certain limitations that point to new research directions. For instance, this study was conducted in Egypt, which is considered a developing country. As a result, the findings may not be applicable to other developed countries. Second, because this study focused on the Egyptian mobile telecommunications industry, the conclusions may not apply to other industries. Finally, the current study used a cross-sectional data survey research approach. A longitudinal study could provide more information on how IC components influence OP over time. It may also reveal other relationships between variables at different periods of testing.

Some future research directions are recommended as a result of these research limitations:

- The research model should be tested in a variety of settings, including banks and other knowledge-intensive enterprises (e.g. retail, consulting, software development and pharmaceutical industry).
- A comparison between manufacturing and service organizations, as well as the private and governmental sectors, might be considered to determine how they manage IC for business performance.
- Researchers might also look into whether our findings can be applied to developed countries in the same or different industries. This will broaden our knowledge and comprehension of IC's global influence, as well as identify cultural variances.
- To explore the dynamic influence of variables over time, a longitudinal study is also recommended.
- The managers of Egyptian mobile telecommunications businesses were approached for this study, and data was collected at various levels of the organizational hierarchy. It is suggested that front-line personnel as well as boards of directors be surveyed to ensure the validity and reliability of the findings.
- A research into how IC dimensions were managed during the Covid-19 crisis and their impact on several aspects of organization performance in Egypt would be a valuable addition to the literature on intellectual capital in developing nations.

References

- Abd-Elrahman, A.-E.H., El-Borsaly, A.A.-E., Hafez, E.A.-E. and Hassan, S.A. (2020), "Intellectual capital and service quality within the mobile telecommunications sector of Egypt", *Journal of Intellectual Capital*, Vol. 21 No. 6, pp. 1185-1208. <https://doi.org/10.1108/JIC-07-2019-0180>
- Abd-Elrahman, A.H., El-Borsaly, A.A., Hafez, E.A. and Hassan, S.A.(2020). The Impact of Service Quality on Organizational Performance in the Mobile Telecommunications Sector In Egypt. *Proceedings on Engineering Sciences*, Vol. 02, No. 1 93-104, doi: 10.24874/PES02.01.010
- Agostini, L., Nosella,A. and Soranzo, B. (2017), "Measuring the impact of relational capital on customer performance in the SME B2B ector:The moderating role of absorptive capacity", *Business Process anagement Journal*, Vol. 23 No. 6, pp. 1144-1166.
- Albadvi, A., Keramati, A. and Razmi, J. (2007), "Assessing the impact of information technology on firm performance considering the role of intervening variables: organizational infrastructures and business processes reengineering", *International Journal of Production Research*, Vol. 12, pp. 2697-734.
- Amirkhani, A., Nazeryani, M., & Faraz, M.(2016). The Effect of Succession Planning on the Employees' Performance based on the Balance Score Card with Regard to the Mediating Role of Commitment. *Research Journal of Management Reviews*, 2(1), 42-51.
- Andreeva, T. and Garanina, T. (2016), "Do all elements of intellectual capital matter for organizational performance? Evidence from Russian context", *Journal of Intellectual Capital*, Vol. 17 No. 2, pp. 397-412.
- Barney, J. (1991), "Firm Resources and Sustained Competitive Advantage", *Journal of Management*, Vol. 1 No. 17, pp. 99-120.
- Baporikar, N. (2015). Adopting Balance Score Card in Higher Education. *International Journal of Strategic Information Technology and Applications (IJSITA)*, 6(2), 1-11
- Bazrkar, A., Iranzadeh, S., & Farahmand, N. F. (2017). Total quality model for aligning organization strategy, improving performance, and improving customer satisfaction by using an approach based on combination of balanced scorecard and lean six sigma. *Cogent Business & Management*, 4(1), 1390818.

- Bazrkar, A., Iranzadeh, S., & Farahmand, N. (2018). Identifying and selecting the strategic process using the cross-efficiency approach based on satisfaction level and extended balanced scorecard. *International Journal for Quality Research*, 12(1), 81-94.
- Beattie, V., & Smith, S, J, (2013). Value creation and business models: Refocusing the intellectual capital debate. *The British Accounting Review*. Volume 45, Issue 4, Pages 243- 254. <https://doi.org/10.1016/j.bar.2013.06.001>
- Bin Ismail, M. (2005). "The Influence of Intellectual Capital on the Performance of Telekom Malaysia (Telco)", *Unpublished Doctoral Dissertation*, October 2005.
- Bollen, L., Vergauwen, P. and Schnieders, S. (2005), "Linking intellectual capital and intellectual property to company performance", *Management Decision*, Vol. 43 No. 9, pp. 1161-1185.
- Bontis, N. (1998), "Intellectual capital: an exploratory study that develops measures and models", *Management Decision*, Vol. 36 No. 2, pp. 63-76.
- Bontis, N., Ciambotti, M., Palazzi, F. and Sgro, F. (2018), "Intellectual capital and financial performance in social cooperative enterprises", *Journal of Intellectual Capital*, Vol. 19 No. 4, pp. 712-731.
- Cabrita, M.R. and Bontis, N. (2008), "Intellectual capital and business performance in the Portuguese banking industry", *International Journal of Technology Management*, Vol. 43 Nos. 1-3, pp. 212-237.
- Castro, G.M., Delgado-Verde, M., Amores-Salvadó, J. and Navas-López, J.E. (2013), "Linking human, technological, and relational assets to technological innovation: exploring a new approach", *Knowledge Management Research & Practice*, Vol. 11 No. 1, pp. 123-132.
- Chen, J., Zhu, Z. and Hong, Y.X. (2004), "Measuring intellectual capital: a new model and empirical study", *Journal of Intellectual Capital*, Vol. 5 No. 1, pp. 195-212.
- Demartini, M. C., & Baretta, V. (2019). Intellectual capital and SMEs' performance: A structured literature review, *Journal of Small Business Management*. Volume 58, Issue 2. <https://doi.org/10.1080/00472778.2019.1659680>.
- Dumay, J. and Roslender, R. (2013), "Utilising narrative to improve the relevance of intellectual capital", *Journal of Accounting & Organizational Change*, Vol. 9 No. 3, pp. 248-279.

- Edvinsson, L. and Malone, M. (1997), "Intellectual Capital: Realising Your Company's True Value by Finding Its Hidden Brain power", HarperCollins, New York, NY.
- Ferenhof, H. A., Durst, S., Bialecki, M. Z., Selig, P. M. (2015), "Intellectual capital dimensions: state of the art in 2014", *Journal of Intellectual Capital*, Vol. 16 No. 1, pp. 58-100.
- F-Jardón, C.M. and Martos, M.S. (2009), "Intellectual capital and performance in wood industries of Argentina", *Journal of Intellectual Capital*, Vol. 10 , No. 4, pp. 600-616.
- González-Loureiro, M. and Dorrego, P.F. (2012), "Intellectual capital and system of innovation: what really matters at innovative SMEs", *Intangible Capital*, Vol. 8 No. 2, pp. 239-274.
- Griffin, M. (2003), "Organizational performance model", *Organizational Performance Model.pdf*. Internet source.
- Hormiga, E., Batista-Canino, R.M. and Sánchez-Medina, A. (2011), "The role of intellectual capital in the success of new ventures", *International Entrepreneurship and Management Journal*, Vol. 7 No. 1, pp. 71-92.
- Hsu, Y.H. and Fang, W. (2009), "Intellectual capital and new product development performance: the mediating role of organizational learning capability", *Technological Forecasting and Social Change*, Vol. 76 No.5, pp. 664-677.
- Huang, C.-F. and Hsueh, S.-L. (2007), "A study on the relationship between intellectual capital and business performance in the engineering consulting industry: a path analysis", *Journal of Civil Engineering and Management*, Vol. 13 No. 4, pp. 265-271.
- Huang, Y.C. and Wu, Y.C.J. (2010), "Intellectual capital and knowledge productivity: the Taiwan biotech industry", *Management Decision*, Vol.48 No. 4, pp. 580-599.
- Iqbal, A., Latif, F., Marimon, F., Sahibzada, U.F. and Hussain, S. (2018) "From knowledge management to organizational performance: Modeling the mediating role of innovation and intellectual capital in higher education", *Journal of Enterprise Information Management*, Vol. 32 No. 1, pp.36-59.
- Inkinen, H. (2015), "Review of empirical research on intellectual capital and firm performance", *Journal of Intellectual Capital*, Vol. 16 No. 3, pp. 518 – 565.

- Jardon, C.M. and Martos, M.S. (2012), "Intellectual capital as competitive advantage in emerging clusters in Latin America", *Journal of Intellectual Capital*, Vol. 13 No. 4, pp. 462-481.
- Jones, G. H., Jones, B. H., & Little, P. (2000). Reputation as Reservoir: Buffering Against Loss in Times of Economic Crisis. *Corporate reputation Review*, Vol. 3, No. 1, Pages 21– 29.
- Kamukama, N. (2013), "Intellectual Capital: Firms' Hidden Source of Service Quality in the Microfinance Industry in Uganda", *Journal of African Business*, Vol. 14 No. 3, pp. 150-161.
- Kamukama, N., Ahiauzu, A. and Ntayi, J.M. (2010), "Intellectual capital and performance: testing interaction effects", *Journal of Intellectual Capital*, Vol. 11 No. 4, pp. 554-574.
- Kamukama, N., Ahiauzu, A. and Ntayi, J.M. (2011), "Competitive advantage: mediator of intellectual capital and performance", *Journal of Intellectual Capital*, Vol. 12 No. 1, pp. 152-164.
- Kaplan, R.S., and Norton, D.P. (1992), "The balanced scorecard: measures that drive performance", *Harvard Business Review*, Vol. 70 No. 1, pp. 71–90.
- Kim, T., Kim, W.G., Park, S.S.-S., Lee, G. and Jee, B. (2012), "Intellectual capital and business performance: what structural relationships do they have in upper-upscale hotels?", *International Journal of Tourism Research*, Vol. 14 No. 4, pp. 391-408.
- Koohang, A., Paliszkiwicz, J. and Goluchowski, J. (2017), "The impact of leadership on trust, knowledge management, and organizational performance: a research model", *Industrial Management & Data Systems*, Vol. 117 No. 3, pp. 521-537.
- Landini, F., Arrighetti, A., & Lasagni, A. (2020). Economic crisis and firm exit: do intangibles matter?. *Industry and Innovation*, Vol.27 No.5, pp. 445-479, <https://doi.10.1080/13662716.2018.1544065>
- Leitner, K.-H. (2011), "The effect of intellectual capital on product innovativeness in SMEs", *International Journal of Technology Management*, Vol. 53 No. 1, pp. 1-18
- Lentjušenkova, O. and Lapina, I. (2016), "The transformation of the organization's intellectual capital: from resource to capital", *Journal of Intellectual Capital*, Vol. 17 No. 4, pp. 610 – 631.
- Lerro, A., Linzalone, R. and Schiuma, G. (2014), "Managing intellectual capital dimensions for organizational value creation", *Journal of Intellectual Capital*, Vol. 15 No. 3, pp. 350 – 361.

- Ling, Y.H. (2013), "The influence of intellectual capital on organizational performance – knowledge management as moderator", *Asia Pacific Journal of Management*, Vol. 30 No. 3, pp. 937- 964.
- Maditinos, D., Šević, Z. and Tsairidis, C. (2010), "Intellectual capital and business performance: an empirical study for the Greek listed - companies", *European Research Studies Journal*, Vol. 13 No. 3, pp. 145-167.
- Marr, B., Gray, D. and Neely, A. (2003), "Why do Firms Measure their Intellectual Capital?", *Journal of Intellectual Capital*, Vol. 4 No. 4, pp. 441-464.
- Marr, B., Gray, D. and Schiuma, G. (2004), "Measuring intellectual capital – what, why, and how", in Bourne, M. (Ed.), *Handbook of Performance Measurement*, Gee, London, pp. 369-411.
- Marzo, G. and Scarpino, E. (2016), "Exploring intellectual capital management in SMEs: an in depth Italian case study", *Journal of Intellectual Capital*, Vol. 17 No. 1 pp. 27-51.
- Mehdivand, M., Reza Zali, M., Madhoshi, M. and Kordnaeij, A. (2012), "Intellectual capital and nano-businesses performance: the moderating role of entrepreneurial orientation", *European Journal of Economics, Finance and Administrative Sciences*, No. 52, pp. 147-162.
- Mehralian, G., Nazari, J. A., Nooriparto, G., & Rasekh, H. R. (2017). TQM and organizational performance using the balanced scorecard approach. *International Journal of Productivity and Performance Management*, 66(1), 111-125.
- Mention, A.-L. and Bontis, N. (2013), "Intellectual capital and performance within the banking sector of Luxembourg and Belgium", *Journal of Intellectual Capital*, Vol. 14 No. 2, pp. 286-309.
- Neely, A. (2005), "The evolution of performance measurement research: Developments in the last decade and a research agenda for the next", *International Journal of Operations & Production Management*, Vol. 25No. 12, pp.1264 – 1277.
- Neely, A.D., Gregory, M. and Platts, K. (1995), "Performance measurement system design – a literature review and research agenda", *International Journal of Operations and Production Management*, Vol. 15 No. 4, pp. 80-116.
- Neely, A., Mike, K. and Chris, A. (2007), "Performance measurement frameworks: A review". In: Neely, A. (Ed.) (2007), "Business

- Performance Measurement: Unifying Theory and Integrating Practice”, Second Edition, Cambridge University Press, Cambridge, pp. 143-162.
- Ngah, R. and Ibrahim, A.R. (2010), “The effect of knowledge sharing on organizational performance in small and medium enterprises”, *Proceedings Knowledge Management 5th International Conference*, Knowledge Management: Theory, Research & Practice, pp. 503-508.
- Nkundabanyanga, S.K. (2016), “Board governance, intellectual capital and firm performance”, *Journal of Economic and Administrative Sciences*, Vol. 32 , No. 1, pp. 20 – 45.
- Obeidat, B.Y., Al-Suradi, M.M., Masa’deh, R.E. and Tarhini, A. (2016), “The impact of knowledge management on innovation: an empirical study on Jordanian consultancy firms”, *Management Research Review*, Vol. 39 No. 10, pp. 1214-1238.
- Orbaningsih, Dwi and Sulila, Ismet and Handhajani, SBP and Pakaja, Fachrudin, Intellectual Capital (IC) in Improving MSME Organizational Performance During the New Normal Pandemic COVID-19 (2020). Available at SSRN: <https://ssrn.com/abstract=3730884> or <http://dx.doi.org/10.2139/ssrn.3730884>
- Panicker, S., & Seshadri, V. (2013). Devising a balanced scorecard to determine Standard Chartered Bank's Performance: A case Study. *International Journal of Business Research and Development*, 2(2), 35-42.
- Sekaran, U. (2003), “Research methods for business a skill building approach”,(4th ed.), John Wiley & Sons, NY, USA.
- Sharabati, A.A., Jawad, S.N. and Bontis, N. (2010), “Intellectual capital and business performance in the pharmaceutical sector of Jordan”, *Management Decision*, Vol. 48 No. 1, pp. 105-131.
- Stewart, T. (1997), “Intellectual Capital: The New Wealth of Organizations”, Doubleday, New York, NY.
- Subramaniam, M. and Youndt, M.A. (2005), “The influence of intellectual capital on the types of innovative capabilities”, *Academy of Management Journal*, Vol. 48 No. 3, pp. 450-463.
- Suraj, O.A. and Bontis, N. (2012), “Managing intellectual capital in Nigerian telecommunications companies”, *Journal of Intellectual Capital*, Vol. 13 , No. 2, pp. 262-282.

- Tjahjadi, B., Soewarno, N., Astri, E. and Hariyati, H. (2019), "Does intellectual capital matter in performance management system-organizational performance relationship? Experience of higher education institutions in Indonesia", *Journal of Intellectual Capital*, Vol. 20 ,No. 4, pp. 533-554.
<https://doi.org/10.1108/JIC-12-2018-0209>.
- Tovstiga, G. and Tulugurova, E. (2007), "Intellectual capital practices and performance in Russian enterprises", *Journal of Intellectual Capital*, Vol.8 ,No. 4, pp. 695-707.
- Vishnu, S. and Gupta, V.K. (2014), "Intellectual capital and performance of pharmaceutical firms in India", *Journal of Intellectual Capital*, Vol. 15 , No. 1, pp. 83-99.
- Wang, D. and Chen, S. (2013), "Does intellectual capital matter? High-performance work systems and bilateral innovative capabilities", *International Journal of Manpower*, Vol. 34 No. 8, pp. 861-879
- Wang, Z., Wang, N. and Liang, H. (2014), "Knowledge sharing, intellectual capital and firm performance", *Management Decision*, Vol. 52 No. 2, pp. 230 – 258.
- Wang, Z., Wang, N. Cao, J. and Ye, X. (2016), "The impact of intellectual capital – knowledge management strategy fit on firm performance", *Management Decision*, Vol. 54 No. 8, pp. 1861 – 1885.
- World Bank (2005), "Where is the wealth of nations? Measuring capital for the 21st century", available at: <http://hdl.handle.net/10986/7505>
- Wu, W.Y., Chang, M.L. and Chen, C.W. (2008), "Promoting innovation through the accumulation of intellectual capital, social capital, and entrepreneurial orientation", *R&D Management*, Vol. 38 No. 3, pp. 265-277.
- Youndt, M.A., Subramaniam, M. and Snell, S.A. (2004), "Intellectual capital profiles: an examination of investments and returns", *Journal of Management Studies*, Vol. 41 No. 2, pp. 335-361.